



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,807	02/25/2004	Hui-Mei Chen	MEG02-005	3341
7590 08/08/2005			EXAMINER	
GEORGE O. SAILE			AU, BAC H	
28 DAVIS AVENUE			ART UNIT	
POUGHKEEPSIE, NY 12603			PAPER NUMBER	
			2822	

DATE MAILED: 08/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/786,807	Applicant(s) CHEN ET AL.	
	Examiner Bac H. Au	Art Unit 2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>15 April 2004</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 1, 3-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1 and 7, it is unclear whether the process comprises a step of wafer probing. For the purpose of this Office Action, it is interpreted as it does.

Regarding claims 3-6, it is unclear in "said **process** is accomplished..." which step is being addressed. For purpose of this Office Action, it is assumed that "process" refers only to the cleaning.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, and 7-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Danovitch (U.S. Pub. 2004/0175657).

Regarding claim 1, Danovitch discloses a semiconductor fabrication and testing process comprising:

providing a semiconductor wafer [10 Fig. 7] having an array of any shape of exposed metal contact pads or metal bumps [20 Fig. 7]; and

cleaning said exposed metal contact pads or metal bumps prior to wafer probing [p. 3, para. 33 and lines 1-6 of para. 38].

Regarding claim 7, Danovitch discloses a semiconductor wafer fabrication and testing process comprising:

providing a semiconductor wafer [10 Fig. 7] having an array of any shape of exposed metal bumps [20 Fig. 7]; and

cleaning said exposed metal bumps prior to wafer probing [p. 3, para. 33 and lines 1-6 of para. 38].

Regarding claims 8-9, Danovitch discloses where in the exposed metal bumps are tin (Sn) or tin (Sn) alloy [20 Fig. 7, and p. 1, para. 8, lines 8-11]

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2822

3. Claims 2-6 and 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Danovitch in view of Ying (U.S. Pub. 2004/0209476).

Regarding claims 2-6 and 10-14, Danovitch [p. 3, para. 33, lines 4-6] discloses that "Techniques well known in the art, such as plasma cleaning, wet or dry chemical cleaning, for example, may be employed." Danovitch fails to disclose "said cleaning is accomplished by..." sputtering with argon (Ar); sputtering with helium (He); sputtering with neon (Ne); sputtering with a mixture of argon (Ar), helium (He), and neon (Ne); and by ion milling. However, Ying discloses a method of cleaning wherein "The plasma treatment step uses a plasma comprising an inert gas to remove residues..." [P. 1, para. 17, lines 7-9]. Ying teaches the plasma to be comprised of "at least one of argon (Ar), neon (Ne), helium (He), and the like." [p. 3, para. 34, lines 1-5]. Finally, Ying teaches "... physical plasma processes, such as ion milling, sputtering, and the like." [p. 1, para. 7, lines 1-4]

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teachings of Ying into the method of Danovitch to have "said cleaning" be accomplished by sputtering with argon (Ar); sputtering with helium (He); sputtering with neon (Ne); sputtering with a mixture of argon (Ar), helium (He), and neon (Ne); and by ion milling. Danovitch teaches plasma cleaning, and Ying further defines plasma processes to include ion milling and sputtering. The ordinary artisan would have been motivated to modify Danovitch in the manner set forth above for at least the purpose of having an inert environment to eliminate unwanted attack of the surface being cleaned, which is well-known in the art.

***Conclusion***

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bac H. Au whose telephone number is 571-272-0237. The examiner can normally be reached on Mon-Fri 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 571-272-1852. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BHA

  
GEORGE ECKERT  
PRIMARY EXAMINER